

A Test-Book of General Embryology.

by William E. Kellbott.

Henry Holt. New York.

# Over , # Chaper I

germ-cells (gametes) & their Formation.

学生, 大さか、eggrsherm ++11 217を科は見をYmcells+までコンタルーコ1cell デアルが アルチを、 特定、生まとい一方からのnaticells+の frandamentally= ほっこのperinting \*\* 1年の大学 を29の大学 トキル、sperm 1・29 ティング ランカンが differentiation 115年+13

Ovum (egg) =1 Term ·· 本本Inaturation / 清·方後 is + 要特/ 引節はまり松為=アルビリス七、でいる1モにますい、Overyte(or courte)か term +57. 21 term " 75p5++18, 1800 +5 Pusht \$2. Oven " 本ま、cellshape、大子 (BAZ 形)、下子が、大村及 pherical スパルコセン、 sponge , hydroide, ver. pseudopodia like process 7 to Bit 7 Met con Au 13/2 haked + 21, m 3 4 + (2" ) = 1324 plasmamembrane 7 = 17/2 m Ovem si teft s t++ undenstru 29 germinal vesicle + 27 がいた、Purkingiが字名シタモノダ Ovem ノウルニはタアルは、素色がかが yolk, 31++1/1/1222. =1=11/1/1- unclear nembrano 574, 1 =1 chromatin to not work 7+2. 23+1+1/2 germinal spot 1,2 noncledes \$" 15m; ovocyte 1 + = 1. "150= centrioles 5" Pop 11 10 1012 5" sphere + 1.7 18 2p + @ 31 + LIN] 711 ( Or garosone) = 17 10 = 9" en to chandria granules is Chandriosomes to pu 2215= 支11 golgi's body 711. 215年 tisa called Idiosome complex 4+2 maturation 15 iii on complex of letthe. Over 1 extoplacem 10. Ooplasm · 初日あり社教 # = > 株に一連ナマネド 一は・3ケトモ alveolar structure is x 50. 4, \$1 \$ = 2.27 ecteplasm (or exoplasm) 2 endeplasm ( or entoplasm) = TP81 & \$1. exoplasm. 3.

cortical layer + 社上 fertilization 降 京東 + 16日 + 2m = 1 デアル.) (if 217 +179 sperm 9 & my sperm 5" XC+1)

Ovum = => 7. polarity 1 T& is animal pole + regetable regetative pole +1 Bby 712 =174. nucleus + 2 to animal pole of 52/6" コニテクスいれ、かいり、異なれもか、ガタforeshadowをルモノデ 17, 100+7 promorphological feature + 27. All ni marchegy . itself = bilateral symmetry 7+2. In Roller, phylloxera (55") 1 # 3 tal.), Dinophilus (archiannelida), Ovum ; 10 096= 大ヤサニコリトトキタトナルカマトナルが分ルナドデアル」

的=n事·3方, 考奏物質·電·217 熱神子 yolt (Dentoplasm)+ まつ、えい作業: Neterageneous+モッラを4721 も、proteinデ. fat, gly cogen + " = 621 nn= iet", Han in 33 F ikt visucity, \$52 21 274 1st on 139 \$4, crystal to then Pil (amphibian egg) 2 yolk 1 3 1 ovem fin strata =+n7 +n7211 (Bird) sun yolk development, periodicity +75112+ 17 50接物 6111 12 英色了 かかまははないもノデアルト、

yolk " coplasm by & BB+3. A 42 19€17 leileh . it. IDB: な2n 4539/cell 2n 体作2mu

York10Wm 東方が主施強アルスコノハケ発の製作アルトル Yorkを軽 1) \$ + + + = . Gp += 10 PG - + 5 + + w. @ tomag homolecital or Isolecital egg+も2 中院上 alecital egg+がより果ナナン、×

Yolk 3 ms germinal vestide - 7 = 1 % i, yolk , 3 x + 12 = 3> 44 131. 1100+ 1 telolecital egg + 27. 21 + 1. po arity \* の南引致10月、うに、水とご16月 0次 村 小ナルモノがラナリ

29 23/1 than Fish, mollosca, - Profe arthropoda (scorpion, hysis). themosttypical bird, reptile et 大彩/如· \$2= 届之~ E1321

又 yolk,中心=集1, 图图=1,到第= +=171 germinal vesidenten -tr. 21 centrolecithal egg + 2 t authropoda, \$ == +12= &21 Egg membranes. egg =, tottoog naked + I " until = \$ 9 " membrane 74=2912 4, egg membranes " AB = 24 (E 8174)

1. Primary membrane - socalled vitalline membrane ; spat = 15ix. 21161. 2/ 3/ cell wall + \$032. 129, structureless, +4=11 2=517=7-" 31= nez"++7, estilization 17#=fertilization membrane++7 5p1 \$ To= 特的=n+19 mm +117+11. 又有面= >PDI穴TO "中军中ison todial line= Zenij 'Zona radiata' i ofin (Vertebrata egg).

2. Secondary membrane - 1ry membrane & Gpogostrom. Ev. Ovary 1 Oven が本来ルトキ 27年 70 follicle cells =3117-5cmモ1+9、(スルカンタップンテ to (21) is an # Olf generation & Bothern ( & apr \$2000) insect egg, fish egg, 设,外原文te, ang 活在, 12日++2. 144日274 membrane 1 pr. 51 = RP11 Sperin 212124. 247 micropyle + 50. chorions (2") membe.)=>not., sperm, 2005 & 14 membe. +31 gf. 19x 637 EXABL 情等=3リテルのrary=最イカマデッイテキタシンがさコナルファリ

3. tertiary membrane in oriductor 116 1917 1645 211 514 + 4 121 ceph alopoda, gaetropoda = pu. 鳥, 而中极, 可充足, 中主产, gelations++1. ++1 top \$, +1 \$, 1865 \$1 \$ 1 coccoon 15-+1.

Sperm (spermatozoon) spermetozoa (pl.) 12+7 In. sperm" micellmar =" \$ = > sucralice = +tn. #E1 my, filiform or flagellate; head, model piece (connecting piece), tail, = tp=fin. head not it hecleus 34+19 Her tp3, " blasm sul; sittle. head, 前 \$ acrosomo (perforatorium) P1 えり blasma からおまられかから ありろちか Taster 表面于指于 blasmic envelopertm middle piece=1, 就维+株区P1. 中村: axial filament by tail 11127 "17. 41 this central body (centroles) +1. axial filament, BD = 3, spiral filament & in. 2.3, mitochondina

24/4500 Tail " axial filament, 1010 = plasmic member on pitton terminal filment is I naked to non fit non-lagellate sperm cladocera sperm " #18 cellular sperm; \* \* \* \* \* \* \* \* \* \* \* \* \* \* Blanchyofoda.



histoff water freez.

人はせえが、受指人を一つに二点サレアリテキ、白アノ東面二 ラ2"株、サトデカココ本教後マルカテドマヤ このゆいしき sunity "15th; headqegq = + ion.

Dimorphism, Sitester antiquisperin = dimegalys projet. Then sexual dimerphism +22+pre is hematoda , ancy racanthus

7" 2 +5 female producing open " chromosomo 6, male p. 5." 5 +11. 122 sperm , # ++1 to i (insert lead length anous = orcurre 5'去主 2~0月時, 5"1+16" 到至 n dimegaly 150+9. 216 = pathological dimorphism 71, 71, sperm an chromatins -17 is Aux #2 (digopytene), 全比入5201 (apyrene) etc 生工, normal + er = Eupyrene+ => sure functional >> tel= l Paludina =11 filiform sperm 1 of a vermiform 1 2157 2100 to 1 gastropoda ニモアリ、式·oligo pyrene 1 モリガ タバニナコア去来テキルトモネフラしい、大大大 Pygaera (th.), Pieris Epa gastropoda an apyrene speim 20723

Spermatophore.

シンハハトキトンテルは多りかナリアル書コストラレテ はパレル、コノ言書ヨ spermatophore 122. 321. A igenital 1/2" tpt, vesichla semino. vas de ereas, wall to 512, +45 =1 +15 capsule 4 7 =115 species -34群、黒いつうい、sperim、塊ハマー鼓・アルリ、サーあ年ナカだ ひる・デル表面= カエッケテレ、いちャブレスマサナ、geneteaトナカ、日P- (まな、caphalopoda " 最高雑デアル

Formation of germ cells.

germ cell 1 40 x 45 ; somatic cell + ( \$ 5 + 4 1 th . 2 1 1 1 1 1 + 7 5 1 1 1 ) 

イ 東本的这デアル.

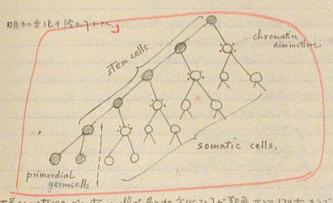
Germ colly 生か germplasm ~ somatoplasm=1 キャキ 切+ E 8月か アルト シラバ hossbaum ;" Je 3/79 ift 1 pp 1950 11. Waismann +17" 71. 2112 12x2 to 5 2+ 2 x arin Hydroid + 517 n germcell x 31 migrate an 19 actoderm, entoderm, mesogloca, A Hydrorhiza 1 cell 7 = \$ tails. szig gonophore i ectoderni ti i zan. 212+m germ cell + th +88 =1年級記り独立のモリテラテルトノネトラヤなかは きまるナ、体の受かすし ハ子孫=慢棒セス・トノ学院=ナルニヨッタノデアル・ 现数的达代1研究=04.germcell"等生,控水产早日与1年1月1年1月

Also E31 for to to to 1341 Boverize ascaris megalocephola ノ研究が、豆精師ノダーの分光ダムネルニットlastomereノ物・気=食と 子等見るい。まーfourcell stage=tu++,分別の見れ 一方, cell=ちはた equatorial plate, 雨始, 却分中央, 打分中心hromatin, 形站5457 19. 中央的pangranular chromocome + 主 两始即, 藉大tat起上+17 見らい. 2175か分報=アガカラン granular 1年分1三分報=祭れ 

トナル· かろナかりちゃら次ノケヤデターちいdimination とり、他ハナンラス、 · tangto somatichta. orang to to Bit stage = rui 89 obsernation dimination. 1511 cell=E + 352" soma & germ + 1 31=
"forespore: reproductive aperture.

diminution, 1722 to 18th somatic cell ++1 +>32 =1 5" germ cell

germeell determinant



下鼻crustacea デもsterncellが争かかかになりが観条サンタ134女からで polyphemus (phyllopoda) F. 2 cells stage, 4 cells stage = +17 - 15, cell \$ = hacmatoxylin ; 25 if in granule & The (mitritive cells 1-121 to 5' germall \$ =>1 15'55+11 => ) 24" 1775" = - 2 1 call =1年7962. 2, cell1等连节包n= 218 d=primordial germ cell=ta + In. 2 +4.7" Moina, Leptodora, Cyclops, Diaptomus = \$157 \*psul

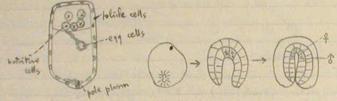
2/ granule 1 00, germcell 7 881/2 " merkmal 7 " germell determinant トラフ 11 origin+ nature=7491 不日日時 +ルモノラン。

Insect \$7" parthenogenesis, paedo genesis, 131/+27 to 20+ miaster " larval stage = +17 larval egg 5" parthenogenetically = develop 2" 2, 学生+ 2n= 5p, 90+ 叶一本至= pole plasma + altra 45= grander + tp分子4. 可持有我 4 4mclei が在来3+4 至17=11 chromatin

#### Nemathelminthes

diminution sens so pole plasma 1 (50=71-17571 7242 245") de plasma + 27 primordial germ cell + Trus

Sagitta j'i 要素 シャトニ vegetatire pole = granvlar body が とこれ、 さか determinant j' gastrola stage = ナルナ archenterore ノ茂 :=17 cell = ことが ステラル、コレが更 : 101 = 谷 レ、リノ中ノ新ノニハカラOvary アトノニハカラ tester ままれ (およれ granslar sub. ーワデ かえいマ 2,4トナル)



chromatine diminution phenomena n & the rice insecting 25 m. 184711 Dytiscus = \$17 Dogonia 11 th 100 + 5 th 100 + 5 th 100 - 100 cyte + + 15 1 netritive cells k=+1. & \$25,2"+ = -11 chromatin ring pane - \$1 daughter cell=11 ×1. 21 ring 1 & to. X in cells egg cell x+1. X \$1 + 573 227 n hutritive cell + +1.



Vertehrata fe かり 早り embryonic stage=51= ないい germcell がたがり、からかい entoderm =74. 後 mesodarm= migrate zn、コノがするない。 やっかうませ、が mesodarm が endodarm かっかりませ、いとりが nesodarm 本本テ dorsal mesentary が ままい する類、かつる。

#### germ cell 1 develope 211 +577.

dorsal mesentery, T板本事等が、コレコリ高等+モハ南ナンタオンル、コノ migration n cutodorm +5 mesoderm , splancuic layer=アップトラテ いいす somatic layer=カック、土がgenital ridge=エロテキチックトなハンテル、 Hydroid, サト: cell, E341, ハンキャモルようの月まこれをファス

germ cells development namimal 1-tpt gonad ディテルルが brimitive +モノデルリノ 格下 Diffuse ニテキナ コトニ Polifera デル parenchyme 中 エルング 等育コル Egg ハトル・エルシックavenchymeデ 木キケリー、sperym が水・バネートトモニ 入りまり、 は近つンナラのデードンデデー Jestilije ナル

BILLY sporosac = +17+1. 1121 Retodermps #172m.

Coelenterata 共地1group ="" Entoderm 中产等素和的" コンデモgonad 1 式コもが中当七年料本級也

Ctenophore pin neridional unel wall 国第二のトンテ発力の Plattelminihes pin 新元をcompact ナンド まなりをのり diffuse + ロモロアリー annelida pin peritoneum ハキャーをはまから、本本いが コンル peritoneum ノートアルトルルニスドス

Echinodermata, Mellusca, arthropoda. 焼い宝中がノビテ茂紙ーサ、ソノアにソレグロブ事をスステーナルフラン

·砂·被育.

目介で養生シテ大キッナコティティ・モchinodermata、Mollusca etc. hurse -call アリティリティ egg = hutition を持ちているないなすいで、かいなしてはしいからしているようないを一つノ大キャイの発が egg-call=1年2 又取1円ノ 知覧がは、コトモコル、日アノ等方トトモン GP=カハルテラコフモアル、日ラル地カラ 学養コトコテ egg = 街方スルモノモアル

1000 Esticle-all ++い、コル、サリマクタラをかけんしいいのかりも11004-発り

4== hurse-cell, follicle-cell + +== egg-cell=17-771 - Coleoptera.

Sperm, 清育.

restes of cell 4" = 12" = 1" sperm = 1. etc.

Coelentevata, Echinodormata etc.

Nematoda ~ # th , Testes , of the Rhachis

~ 22 plasma, + 13 711. 1/c= sperm cell 4" " 7

annelida, Turbellaria, Sagitta + 17" ...

一時 1 sperm cells # 韓1+1 plasma (Cytophore)17711=

Lepidoptera ;". cytophore to the \$2770. our Verson's call

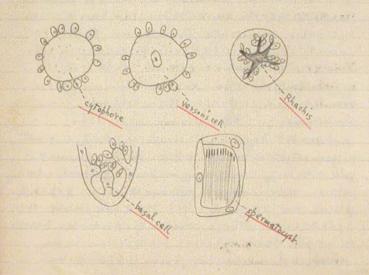
mollesca " textes wall 'epithelium , neer 1 7507 basal colly

Coleoftera 7" nutritive cells 2024 \$ 1124. 41 th ; sperm "

音をい かりかまなす spermatocustrio.

mammal. mollusea , basal cell 1374+ + tacticular canalicule , wall cell 1712 = 1 4 5 4 1 = 1 + 4 9 + 11 (sertolicell) sperm. bundle + + 17 head 7 19724.

Sertoli cell origin, L=an germ cell 1-4ps early stage= からまはいをはら、 Pu人の全型の項の見 =3ルトティ



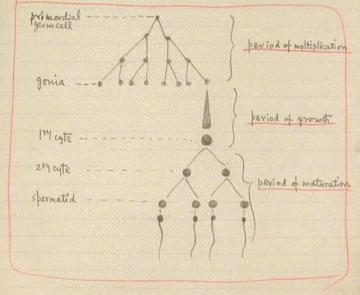
コニット 花末 tneis 大生をかっことすがられ process i principle で生いか料 デル、is primordial germ cell of gonad = 達いる かれい Ovogonia. (sparmatogonia) =+ル、コムが period of multiplication が 次 period of multiplication では period of multiplication は period of multiplication ・ 注 growth period 、 スニー注 Imateration division ++ッチ period of materation ・ 重変.

1). - ty golf sphervle 6 32+105 += 1 1 1 to 70 1 to 2 cm.

(Nucleus 1 chromosome 1 60 51 to 74 1 1 to 70 1 to 70

decentralization +== 512 basabillo = 700 15" acidophile =+11. hucledi 11 2+11 547 oxyphilic +5 basabhilic =+11 chromosome + 78/12 = 15/668 v.

growth period / 地口 = chromosome = 2 compact = 10. 34 haematoxylin= 清和 hadeoli サキタナイ ます ハラバラ = ナルデ yolk spherule = +ルナ ティル 人がアルモラブアル



over " growth ferred & 1. 2 period of maturation 1=101/ 18 2% are polar body + tiz. is legg, 3 polar bodystin. Det. 8, Marky polar body " >" polacyte + => polar body . egg + eguévalent : E++ ; maturation= ++++ + + + tertingation, preliminary step 1:7 germ cell, +1= \$1+ \$11 + 12" is chromosome complex = \* \$ 7 12" is. materiation 12 kg .. diploid chromosome complex (solutical) 12 kg " 12 to a haploid " (germ call 14 ist) 2) to a mytosis &= DEL Jimytosis + If= Metosis (masosis) + 2 -. agar = on Lepidosiren pavadoxa, 3750. 21 sp. " diploid no. 38. Laploid no. 19 spamatogonia 1 resting stage . - dromatin, 2324 21 primary spamatocyte - 2001 growth period 21 cytes resting stage \*, (图 # + + 1. 1/4 : X = 12 12 5 (01) 1.7 2 14. 2475 pireme stage or deptitene stage + 和7, 2031年が核ノーを=集中サレ、柳田=つ 150 005 fise to the 104 to 7 72 . . . 20 go Tene stage. the sold the sold to the the sold (growth period) to home of the sold to the s =1=40. 1 & fuse 2017 syhapsis (or syndesis)+27. 21 \$ 1/2 + 41 1 9 " 113 + 11 29 + 1 = 1 chromosome + 07+14. 24. = 2000, 2007 tuby livalent & Exitin univalent & on. 26 #6 6 m, 18 11 m, 5+ 15 5 th 2 15 ring 46 +175 chromosome 1242 ... diplotene st. (2" >i'v > =>782moi strepsitenesti) pachytine, 12:105, >1 stage= 0+7%' Symigesis + It chromosome

spermatigoria primary spermatolite

scondary shlmatocyte " paraymapis.

spermetrid " paraymapis.

spermetrid " a paraymapi

growth period

\*1 Stage + 24" christissime. A + 47. ... - diakinesis

1717 to 18 ru meta phase = > 17 chromosome " univalent

+ = 15 side by side = + 5-7 pole = 514 ... " 57 + + 1...

second division. & Elmytosis 174 = 48 = 08 % pole = 31 orn.

1 11 184 ... first division 1217 11.

first division 12+7 & reducing division or reduction division second div.

equational division

reduction 1 +2 n ig padrytyne 1 +2 2 h hadent chromosome =

+127 +122 + 121 - 122 | pseudo-reduction

shamoto genesis=+17 reducing no. = +129 =1 4 secondary shamocyte.

HemipTera 1 Pa 4p,=+1x

Synapsis diakinesis

Zygotail Parkytene diplotene

orogenesis, polarboxy

() 口 %

out 811 up bired 1 x+n. or 312 to paraey action From (sidely side 122)

アルかかるもける。

of and to and it of Telesymphesis + 20. 24 tentota # THEO 10286-50

fara 1 to secondary spa. 184 less 11 the reduce in ... pre-reduction

telo. "\$511/A\$ " post-reduction.

Leterotypic division duomocome ordestage = #5 + 51277521.

homeotypic division

primary ovocyte

secondary of

Hirst Holar body

mature of

maturation in female, \$ 7 11/4 " hp . 4/5 3 1/4 1 0 ovocite 1 growth period 5. 6.1 synapsis . fist discon 1 metaphase. 2. 1 = \$10 - \$1\$ . ) P.1. 11 18 = shromorous . - It reiling stage = > 179 2 hinetionica + polar body 1 xsi

Winiwaster 1 36, orogenizis

restre tail ... chromosome " 3 ; resolve 2". " of istmining the chromosome 1: 627 000 depose to Proft / ES 7. . . + " - 5 nouclereste " HA E " De trassfile " Pt . . T. S. 1. to chimosome. I condense: howoh! polar rody in my of there of returns in to

15 1 tel en mossi Terlancia motoria, etc es telingre almanal est .. . : 12 11 12 14 17 11 1 .. Iriclaria leftoplana . . il andres Edilie 47 nel money larva - 17 process authoral pertolection to not polar body & to 25 19 16

(1) I'm at the way by cytoplasmi structure 1 = 12

To retendent duction they controlle in family of the of it !! " conducte rolle hody e + 16 0 go. + 1 10 % . ... with trypy the the night conductable

Jananos

iramat histozonigis ( spermioginisis)

speciated 7. throno some outer haptened, 42,14. 1:01 k +1 - contract established, distal + proximal -, destal . Failts

in driving in contestrate or a read & to # for 127 & nation Kenne I'v ( PANARU BUS) ATE

griffi body a acceptant in Ditage the xi mornin

: 10' ... es 1111

yels: - 14: 1 % = ario, last -> acrosome perforate. ... prox. rather publication in & . 11 . 111011 . d.c. " neik" retentiere - midde piece FAR 1+2

Fath to my

Station I

[Fertilization] - 11 the pour

16 herm + egg + activate To

is from reggisterment, union & att.

学,将人

. + + + ( ) . 1 P. olc 12 sertification is to 11 11 24 } Northerntonisting 7 ?

e + Bridge it in the constant

17. i classicaly + & t & p. i. + 2. t. mate in another

is is que plans Assirable 2: 10.00 be televated

- reducer, netations to , permer (d. t. t. 4. . Attinollist) give tire in molar lody it, ascare, turbellaria crusteca) & pion " & ore naturator dirling 9+1 E179.

x . sea- within type xx. Vocares - type.

of month period = "com xuer 7" ( auchda 1 saccocorros)

これを こうかけれていてい 打りがはかいまいて か 増まれたいですないない

.. M. 11, 3: 11 00 age, 2-182)

To you havelet recommend 1 5 x 17 10 h : " 1. m 1 x 11 h 12 x develope 2 Tis natulat or it , governal di risterio ; 15 7 To Tis ? fair

Wilson & 12th 1 DL7 C. Eatin Covelvatily

2 1 1211 curtoplanen 5 th 12 1 072 27 " on 2 1 1 p \$ my 110. 37"

were bisto : 11 72 south + + + > 2 to je sperm 1 hemotox ; , m/s : " " to " it the ane sign I it a numel contical by some of the sound

1 to 180 confortentaine 12- 99-12 - 12 st in the good lies .

313 W 3" +the germinal recipiones son fertilization : " A. ery-stemmarizけいテモでの日、

427" 1 5/1 3 - 21 1 cruinal ristle + 30 7 27 into 32 2 19/61 28 19. a. S. grap Be Unout 2 d'i. & pertilization ... eg / \$ is layer 19. setelager or contich large. I the + E, incredisect on to 14, 2, 4, 14. chomo . mit.) = 04 orlaying 1 or sherm hoffice \$11 1. ses toft in seize if it shows and was st. a palicipation of conditionally in skip : gp : testis was ko up " a celey xor" " jestili airon . ata it the Patinespreig to show a fire you in root - he was they we 中華が、東、人はいまいたい サデルカケン内が、contical large first to the to the want of front or to the transfer that the time of the in he had fill into the conse

porm - forthermanities, in year, e.g. 1-2 will be a dely or the from & in relationers of the tree "114 5 sing

primatogon + To a 1 11 h , Risp published force into 1 2 7 2 . Att. 1 Removed trad to going = bis , terroport is a 1 forther for ) The second of the second section of the one of the second 7:00 1 F. R. Lillie - 2 " Fr. Tilipua Kilt 41. Melling . " 1 19 " in arbacia . 4,

. . . in the exercise in the water to the such sq. " @ dansales to the so the so

in men or uponia detration

1. .. along is it is align within

1 1 to 12 11 1 to 12 1 . A-girtination

if in coreal lays, 1891 + mustitue t = 1117 1 . 7 . h/8 + . 1 . 2 mil

at tract on a continue of the section of the section. , in the form on the laterias or it agg until f The second section of the best but to proper to the second 11 9. 11 171 . 3 ...

1-Arighton - ? himotox 11 5% - 17 - firm 1 11 to 15 in . it il motes . . P. .. 180 ILD . . 12 . 186 (Buller 177) Ter . Har alle flikt - Home our himsers , 119 only a more of the section of it weather " I have a the office of a from With the clim of the plant of the road of

A property of the property of the second

Production of the Contract of the Children

リケットア、前巻、ケート動像マンドルからはなりはんトルナルマン、ハノンサイル ris. Exam. collordal indians, a 2th of The cooling play ". is destroy on the recommendate of a minimum recorder in a contin attle sett it italie for of leagent fill, is withour is life " of holy on against ation in secretary fraces - 1 1465 set of "1" - It strongylo controles populateur to Bit & s. franciscanos 1 sterm , aggintinate 42% to to +1. 1/1. 3. S. franciscan-s , agg vates " At 18:1177 S. poveratos - " " 19 still

Philips all transportion Do H. Ether for father attendent to save in in inspecificity of a oundividuality +1. 2- 1. S. porevatering note. 21. S. franciscams 1 70 841 \$ 1018-1 sperm on adifference 7. n. 2000 12 1116 ではない 食りはつか 大きいは、 はんないなり青をはらして 41. 1. 11, \$ mad

fertilization - strumorphological change はいれかのうのです。でつかり、い物かの大はチャックル いか、長にりと、い、入い、 supplied entrance coul an attraction come ... it then sperin seeg: rups, come s'eight. yeinst 2017: E 1000E1 \$ 1707 \$11 WE 11 16 115"

as 12 to proceed by yours of home is come; " as in war in our to the order

xxxxxx + Fr. 77 . Marine = her +721 24 -1. > En . Norius exists autor war in the training from the second The second factor was to the first the second of the secon contate in my training is see in 100 to express, ish A. manters, Timeria Carata, medica, wheel, 40, 1. 1. 18 Keren I Verice, and middle files

16. . . . . . . . . There to the fortical law, I'm

1. 1 " itom ... i and a # 10 , ..... . 2010, 29118 1) = The Bullion State of the state , plant 1000 3000 31 13年 pola コムットラリット あり かはらずっ 11 . If man and a set were ... . se 1 3/62 11 · + 1. France 12 - 5. 9:2 1 16:4 1:41 1 271 the state of the second of the ter. it is walking, this on survey a chillis, tools 

12 cay body 1 1 x 1 x ... body outall & lotten 1-10 7 h . X " duration Kind to a p " " " Z. ] . . . p of in committee of the 12.7. 128. - 1-14







88 25 Ta Newson special 14 2 19 111 1111 160 1 80th 1 100 1 10 17 51\$



12 - m. Hasen all 18 18 18 =" Retoplasm (contral ? girl , i. X-412- 350 " Pint " 1.1.1 ns, it (Clopens). + & (Rhya helmi, quelobophora) 1+70 ... honeton " removal free 1 1 10 no active or





planning 1 m . . 31 1-1

in accounted to bely to majory took all the services of the se

- cut were a my person has not been able to is it gets than between the thematon in a second that institute or minimum " " I have World K : 1 corps southern markets . Signature Harris of man the six ingresses win a so . . Her · Birpinia, Polysper ++1. a rich fath coins of specific when my the chief in process to see the transfer to the section The same of the state of the st of tenter . . . . polispering 1856 1. c of r Trivisjania actor dita, liqualmo . with a long a digland, with the registeriality of the 1. 12. 1 . . . Em hay . . . . dift " Tido are " " rates by 2 %

· jonnet, El

ange, into , it is tripled in

Beer Grand Miller on long of

is the state of th

Vov. S.



Cobernal on bath. Cobernal on bath.



Fin cleavage nucleus + 27. 0011 ロアノ中心:サイボ、2 79 至の子上· nucleus, thopath & 19: 507 定しるい全り子明リリ IF Cynthia, 186 = " sperm" さいま面によりかするは、色はようり せん コルツはこまとい本一ノ分裂方 1- 12 31 simalen. 1 7 th+ 2 = yellow & lear substance 14 m. to yellow sur. FOAH3++1. spermany proxxx 21 sigullow sul " 12 - me o larm + m, clear one " ectode ( in + + in. 2091 Jan 2 015 male no in path 小な生上かり意義かも1月か十七日 tascaris, + 17 male, n. " Lemale n. 1 heateration 7 +1116) . #3 K +5+1c

" Maris, Crefidula デモコングステル : 113年代春、久田か、東京 hudens mix is th - 2エルが 事実 パー 計士ンテキル・グトカッラフィエン 1.P. カーののmery + ルッカナイ、 Diptera ナーディ 久ト田ノン、まから、 Diptera ナーディ 久ト田ノン、まから、 なは、 なま ・ サント カサスト・大・ 展: 対 ナナンスモーン 対 ナナント 車 ニテーダル、 2い gonomery 対 2に えりのかり、 又 Moenkhaus ハナフター Fundulus + Menidia + hybrid ディンノニフィットノ Chromosome ハ 大・モード





常・ 知味からり 最終に 三十5 31/1日に の 所た, chromosome, は明:1子に サガツ いれならういり ひかれなませる コモ gonomery 交に 年年17」 male 及 female, haplored right, chromosome group からけんは chromosome 215. コム patilization トロラ 気を 常いし、

(分文10:22+1)
Acrosome 14-1 Novies (実験デル目を中・スリアラック さったまごすれた。
a.vosoms いま golgi lody: on pur ters 21 golgi lody. socretory granule 上記接て、1月ほか、19 デ acrosomen か enzyme 1 ものもに17 打ターア東テコレンタリ ヴァ・activate でに13 対イトは20東で、一つ1 hypothesisラ Bowen1の最いますり Centriol 1 はなって、1 はなって、1 1000 は 1000 ではない 1 生によって、1 1000 は 100

ientrosome « sperim n' E17 \$7 210 -17

3-9 dre si-... renter ++ : Bover

maturation 1150 egg « 1 = 12 5+27=

7 trans ele actures division contors on

sperm " 27 = 100 plasma = 1200 1 - 1000 n. complementary = 1 + 1 - 100 5 hp d. r.m. contros me plaster - 11 plaster = 2 = 10 perm + + 2 egg d . r.

2. 1 plaster hor here = egg d = 11 plaster = 2 = 10 perm + + 2 egg d . r.

1. 2 = 1 plaster = 10 plaster = 10 perm = 1

sie = · Kin, cleanage, control - The 1 to . 2 1+ fr to his astro 11 1 200 marge . live + 12 con tern - Clepiteras , ging



こ かないは よるりもつから 一連をいてはり

internation dia protoplasm differentiation. & 13 1. 18/1/ P1 Arris , Arris , et in sation of " shepare se i meterondria Sinone 7 25 4 1" egy i hill fonding I mix 211 1 8713 577 egg: mitogondina raw ? " ibondriogamy . a 1 /5/fill; po + inorth it. Exercis salem middlespiece, 1818 men clearage no blastmere 1. , 6 . 1 11 1' ( . 2 . 15 - 11) laughter cell - 17 177 47, 32 5 /6 1 21 trace 17:1 similar frece (mitchondin) 127 41, 34, 41: 5" 45 I shirt It to 12 int of the mithonding & heredity 1 18/ fait offering

I bartisi pertilication : Alim . Egg : activate 2. 4% calibramy . 5 . 11 19 294 4 3 17 · 71/22 18 mistage , 51, - 17 18 th + price an.



\* 11 egy 5 & starra 419, 1931 . +1. " it it it's diploid ; if , emhapfind 11. in sperm + AKHO; treat - partilize · P · of 2 min

2. gynogenesis. partial fertification 11 = form proneucleus sumité ex Won zign happoid larva + the organogenesis 1 27. pox = 212711 Bataillon , Bufo & Palobates = 4/8 n / 18/2 +11. 213/ \$\$1099 : Triton 1184 / spering + 4. A activate 2" = 4 " + sperin it + 97 ·· 多少智素、方绘心、 女to O. Hertwig及 GAP. Hertwig , = 7 " Dth , 3+ h 7 Toth (perms

is a tichinodermata ++ i radial my offin speries speries strue the activate in: it is 3/18 ", egg 5" tadopole 77" (22 1 /2) 21 radium parthemogeness +47 21 radium: Pin of 101/ Ext - 19 abnormal 2. normal + 3/5. 4+2 05 10 284 4 sperm 28 14; i taleofamy 17 a. + + chromaten . radiom 183. A 1- 21 alnomal + developers for their sperm 13" gyrogens, iter normal dev. 112 1. 11 5/15, Bhakdatis alemans in Nasuntada former fromiste 11 5 × sperm 7 6 × 2 18 harmaphrodite +11 13 \$1. 15 \$ 155 8 1 132 1 1/2 17 " soil festilisation to 13". " for first polocite, to 2117 reduction Eiz" " bly spenn Aus calinganing son" of 1 to in it fell 1 parthenogenous + 2 " estemn > 5% activate + 2 + 24 - 14, 94 majenti 12 Rh. pellis " sex separate + " > 1/2 motion " 3 gyrageric tracky " \$ 2 ne 174 + P. Hering 3. androgenesis. egg + vadion ; treating in normal + sherm y + + 12: 9. Hearing いなり用けを敬い、2 から49、たくなりあるこうない、核いかマコルかしれない、大変を、マ 11.04 35 haploid +528 E.n. Packard namelida, Chastofteraus +4; 17 +4 17 1613

4. Moragony. Delage 1 12 17 2 11 21 the 14 egg sherm 1 xx, develop +21. An Hartwester, figs. Sty. Opendate for my feeth 199 year now charlana Kiss

12 de les amelies moderna tribos fisifico y Sistemans. 1 eggi tragment.

e i p. spermann; trocas tribos fisifico y Sistemans. 1 eggi tragment.

e i p. spermann (14, 19) o Baltga (12) - truton; egg = sperma y or s

12 13 14 1 1000 = 500 to the tribos of or triton; bysiologically





polyspromy +1. 1176 egg.n.

fartishe pepering 1; intromed factions of 1111 years of an eng.

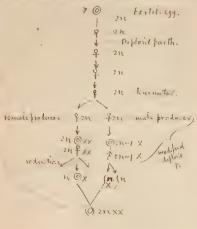
There are in all farther against affirmation of 720 elog. 1 8627

. Maturet ranker against

. a time cartenogradia

external has the regence of the common the server of 12 they to the street of 12 they to the street of 12 they to the street of 12 the street

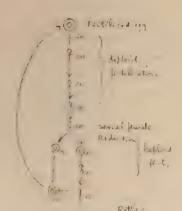
1 Meplo't, contingencie



ists to 1 th 20th steers on the 12 is any 20 parting of the 2 deployed for the explanation of the plane of the produces 1 the produces 1 the 12 produces 12 the 12 the 12 produces 12 the 12 the 12 produces 12 prod

nother of the ylloxore in facilitized egg or enough a 20" aphic into stone mother of the or some of the stone of the order of the stone of the order of the order

Roller in \$ 1/2 1 10 11 april 50 H. deploid parthenogenesis i in \$4.5 Fth 1/22 & some sexual female mer 142 served & sopre soluction of 11 nen. or aprese 2 Hh esai ) + 8 for + 8 for es 2 Hh an es 2



Antiharak fertiteration act it is all the sente affects to the sentent of the sen

the hipotant metologue one of the specient of the test of the Mongaer of 1896 from the set of 186 and 1896 from the set of 186 and 1898 characteristics of 196 and 1898 and 1898

The folian next survey or hydresis in materials at 1 specime of units in to specime of units in to specime of the day of the help

rate out the all hely a defener x of the pinetale of Lang. morgan 1. 1899 ex - 31-1 2th con up 1 is He hype to nie vd. 100 g. 10 5 4 1 11 5000 20 3 18 10 1 125 107 1 Lock or or the wing the · 3/27 mgd, 2104 (1/4 50 c.c. 10 mingl, +0.07 20) 11 1.14. リリア者をナナ · ninkl いたい きりけらいというaline ノデ フェノイリ 11 for the Delage, Wilson, Batallon, Lock of a 17 the or 1514 +7 82 L sweet 1 4 mg. to artificial feddication is 1 cof 1821 instedioses, industrials treg 11 the store 2 1515 in focust thints) christing these lock of the total so the set of a re tople in demnal stante or go my "hemeal parties, iteration in ing init relies in it init 1. (6) proceed to be seen 2. 1. 391 mb 2. 414. 11 jn. 11 12 127711. vario do ritz, Una, or per el de Ama de Arierde asperate, constitution in the hope there is I tale & t. th. I some in high 

Sel arming the selection of the selectio as a comment of the second of . is to be ally intoche religionship in the region of the looks setting - 1 1 jair million in 1991 at 1991 buth 19416 ing go in a diane muitane of a life dilingue on thiple. is a coal of a "coalth of whit periposentageth. and a second second second of a feeling of without the the wat to assert the granter " mere .. Let elser ... a. f . Laster integric acid - copto i 10 % 6 h. . . prove ments one . attack . pertite where and a comment to mediate metalioners or continuously A late. He see could be retribularious the test with the serve alstances 18 of -1848 as 1916 is a trailinger a consensationing of the Contact of consent an and the state of the same with the state of and and a To may take the state of the set ingle torice walls, in 1 1 1 1 1 1 1 1 1 metatement 2 1 1 1 1 19 1 6 11 double well of 一般では、一直をおけるというないから、 of the contra of the soil of a bear suger advition 1. 1. 15 21 . 15 21 . . 5 1 2 7 8 . . 200 . 19 10 or a constant the second throughouse in him of Rance was the way to have after a hope of the first for the steps. as the confidence that is the transfer of the leglant of the

replied they the of gaters any entite a material or confirm i have reproduce a haplander to a tradición open a se o lawn hapland or all , lawn brok a 1's 5 war , " . . . . in them there to haplit, but a sign in 1111 the their was entering in ining , 10 sound hapfeid it lepladeres & a france for La the relative trees of enterely as from no courts of my conflictioners of it it is and both a hours as with the ipservation 1812 years of a while will a war in girst plouted by, as by second poloute discourse let 10, 4 10, 70 also second placets of is the inflored or a would place de donne in 1 ) a faille rigg & It is a re to the age light it is leplant on the worth to ... the we a ser of polarite De very 1/1 a per. > attendate terr I attorn thing idention, water applicate all fole transer os, tetraloid recognis total at father att tadopt tadoptle , thus they haped from it the cours lape to a 21 h 3 de your is a change in Rossy de in les who land " " " is the count cost expectedly to how some The 14 x now 1 /2 west to move the worlding in bearing reduce emission to crisis where de clearly compression of an exp more dance until a structure of

Annie to by

Monaste

No. 1. 1 m and telepool to my

### Futilization & Sex

黄 知此外界11年 的决定如此部外各的骨部没切水其多维热 18 mm 8 + > 18 + 2 = 1 16 12 7 10 00 5 m letterminent ; 7-2 10 6 4 . St. 21 2 20 2) 3 · 是于 · · · · 可以依接的果件以产生+要有《内加苦》· 作号》/沒的出 かいとうない、大人のはは、一次にかかけいはながきまれないないないか マーノンをないいでかれるいけい方力を流れれないはない。 121211大流流, 流花上、黄色,松木红红人和小水、炒地袋以,流多水。 of " is a mental in . It's mental of great to fe! Heredity Phonomene + 1 - sugar + 7/1 1821 \$ 2 to : strasb. + +; Buteron lustle, Coviens a - A dis intestion & wanded you + 10: Photo FX WALLEST & 1517 17. -11 6 m 1 1 12 10 1 17 1 18 18 18 1 4 1 1 2 1 men talifor harde tous . ... . . . . . . Fo ismais for non females , factor 18 miles 11. F. 17 (11.1) F1+1 ( 11. A) MANAGE 11. 81 + 10. 1217 At a commence of the same state of the same of the 1. 1 1 ker 1 " He " 1. it become some to sex determination ither . for . I hier recommences mail ung, stevens Wilson os 21. Exercises in the Healing in sexchromosome in es is a retriementation of the fire or chromosome, in mataphers

1+4. equatorial plate 1 17. + > > (metaphase), 218" enaphase 211 347, fole 1411



٠٠٠ ١ - ١٠٠٠

. Mission 18 = 11 to pole = 12170 2. Lot fix XX in a como province . XI 8 / HARLE YI 82/ 40 error de la faxion de la como de la como



1974. Auchyronantirs + 10 namatrda 11 Mohoni 1 demonstrate . 7 Hojim se sematrda a fin 12 hon. Ben 11 chrons 10 spelm : 6 choms, 12 1 5 choms. 111 + 7 His to fam. cally spainter its settle spainted to 5 00 miles 17 + 5 10 7 + 10 2 11 \$ 00 10 6 00 m. 2.58 =

65 4, e 207 1/3) 1, 617 chung 124 1, 269 kertt.

24 13 shorm - 517 chung 6 5 20 6 4 4 monde 46.

12 10 1 1 1 1 1 1 1 3 5 featilization 14: 5 20.

11 2.12 hours 1 2 1 2 1 5 1 4 1 1 1 1 7 2



1 sex dromosome " 101 / 12

A toharrows & is is resolutionance in gar 13 how in resting style + discrimentificate adoption thereing 9 70 136 15 mg c.



division. 14 novem (Benes Professone 2001. Bestingstagle X 700

# Fre demonstrate to recen Edeny a sperme 12/6 + 151.,

The special according Elter himordal convert to.

The Man Ay 1. XC 10 heterogenetic in 8 x XX is homogenetic erries of

to it is any execution of the theory of the theory of the theory of the state of th

9- × 3. ...

Typhands charefrism 191-1991 12 / 195 5 97 rotes is 3 much

it has creation of x . I prote to Experiently the month of the shifty

2 12 12 - 12 12 togeter hime. In the training of the fifth browner

0- 2 m. 2 m zighold o'z tee Browley 2 m2 2 1 to egg 5 3/27 / 2 mile tage

1 - 2 m z 12 igh melatilized 1 to 10 mile, former to the will of 1 3 h.

1 - 2 m z 12 igh melatilized 1 to 10 mile, former to the will of 1 3 h.

1 - 2 m z 12 igh melatilized 1 to 10 mile, former to the will of 1 3 h.

1 - 2 m z 12 igh melatilized 1 to 10 mile, for what, if is a side of the melas beaution is

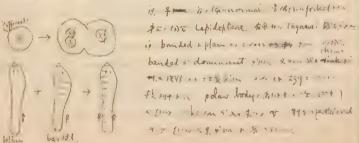
1 - 2 m z 12 igh melatilized 2 is not to 10 miles of the melas beaution is

1 - 2 m z 12 igh melatilized 2 is not to 10 miles in the melas beaution is

1 - 2 m z 12 igh melatilized 2 miles in the melas beaution is

1 - 2 m z 2

11. Foyz : 3. Test in experience with the Torked is 1511 looked is 1511 looked in 1500 kent of 1511 looked in 1



2 C2

2 handed ; dominat (B) + in sex : 2 \_ in consenter - in one with 2 = ]!

hir maphradite : 1820 cytology

1. in so, der in 1, 12 in 15 in 20 hormally in 2 47 12 2 in 151

1. in 162. Inch in 165 193 19; Ill may 19 services XI XIS by's 8'8

1. if X x 198 . Green in 165 193 19; Ill may 19 services XI XIS by's 8'8

1. in 198 in a lifterentante 2 to 3 differentante in 18% is in homestade

land stimm ingrarenosom (Rhetiditis rigrovenosa) in harmaphrodute

yet item sen separate 1844 141 1 in 1984. P2 1 17 19 19; 188

8. 5. 10 d in sen 1998. 164 12 1 in 1998. P2 1 17 19; 19 188

Assurethrodute 2 to drives, no tros in 16 harmaphrodute, cytologically

13 fr 18 hormaphrodute 7 22 this seguetation division risches

311 112 1 in 25 145 16 17 17 18 16 20 hormaphrodute.

114 8 9 5 the 1899 18 6, horm 5, 16 2 5 3 00

12 12 12 12 12 12 12 12 12 13 16 16 16 17 17 17 18

1. 1.

fartte nozenesis esex chromosome fartte nozenesis

26 maje e dip. e = 19te m. hap. i fartte nozenesis .

2 typical 19te is 3.66/re. pertil. ed egg. 32,

m jertimed egg. 16, 20

12 = 30 + XX 16 = 15 + X 13.1 Km Aront Anomarone on, a special order famotiques in Maria Copeland.

Mark, hacktockein, Deneasterning, or end of dension the about of

Are, of reducing does of the order, polar today, beneficial rooters to.

Insurano account to the content of Retife (in Bright Deplaster.

1 a philot Phylloxe, a m. female formales from no mais is not in Xine.

1 a philot Phylloxe, a m. female formales from no mais is not in Xine.

1 a philot Phylloxe, a m. female formales from no mais is not in Xine.

1 a philot Phylloxe, a m. female formales from no mais is not in Xine.

1 a philot Phylloxe, a m. female formales from no mais is not in the content of the

Jak-chromosome / 4.72 % & of. 20 \$ 55 th, 2 tomesome a specifical strains of the second of the secon

11. () () () () () () ()

"X: 3A on exercision and rece "X: 4A or e. 12: 1A or e.

(a famale i in ... in 2x. 3A of 1: 15: 6 hiterax 12: famale 14/21

2X: 3A(N): 10 posts, lam 1: secretaria and ... male 14/22

X 3X: 2A of super-famale. "441 is a new stable) 2 1X: 3A

- super-male 10 Xoro. is successive resentations

+ 1 sutto 2003 + 10: 40 xoro 12. ... 18: 18: 18: 20 for the male 18: 20

tendency so, made unto some male & in mother

\$ 25 30 8

## Clearage and Development

potitionage 1818 14. 18 Con 24014, Oann. 15 17.44 17 16111 1 Rich & President on.

- 1) clearage (with histor) sp. net stic desires and 3 reconstitues Halmeres on I will process 1/21 17 god an 1 1994 on
- and will and northern the catige is would be assessed.
  - ( ) foresignin is early the markers
- it differentian in a sometime to be the real representation はこうを一篇文 今日十八十五美の交響指之訓除的時人一つちの別し、参い了·表集可しか theinstone ing is take or now help treating cell distion , in sis fished . re to be for sal y sometime you). I tethe Cantertain it is \* I to ... is weath norphelance of cell livision on them

were bland any . 12 5 1/2 17 17 tissue cell man I'm principle in 10:96 11 - 1. 2 Toy " >12-27x - 5211 17 . 1 71 Keere 211511 - 21 11/4 [ ] 101 Frenchister & . . . . - M. will-dission - 12 mily by in

Sachs-Hartings in - sachs of - who the fit ips so wigner. 2. 16 . Mar Thinks to D + (Expression ) 1 4 54 Cathe things saids contest , la tracce sonton a crotoblasmic mass, pr - 12 20 2 spin les 10 performic mass, longest was . "La. 15 17 sequentition blues. , 1113 - 1 ...... the heavage .. ist , a land . 1.2. 16. 27. 40 · Emixing , solarichely

O. Heatign is westing 13+h, the & has, the petiplet. 10 position a feeting 1811. 1. 13 200 4. spendile 13. plans refer practice

12m 1/2 4/h, 10h toward as mile 18 sty the mile of the spe

2 6 9 36 20 10/2 ... 7=1 Spindle 1. 3-1 plain = \$19 m. 10 07 7 -1 charage places & I'ver et - in & relatings ... " " " " in quarty o'- +, + to = Ga + + (5) = 160 spender the charage, planer is + + + + to 中のデナーナルを務め、事情の対象しからからいない、大体がはまれてまれて

\$77. 51. m cleavage. April 1 yolk 2011 historiation =18/1/22 yellow it claury 1757 , 12 Kenting 11. opt to homogeneous, 1 orriver op & 3 to 7 1821 - 10 yolk, & 13 4 so, 3,000 +

1. homolecital egg. Up = & f vs: 7:; P

pormer spanff-racs>- alcothal ejg 12 2 2.

2. telelicithal egg. up 7 131 t 15 ip 115 The - to 8 + quel of let our up elf -. yellenensie. s. Mr. yelk is pole regetable ingetative pole, 1 1th rannal pole 1 47 home-

Secretal is appole with so the & forminal pole one & a.

3. controlocital egg constacea, welenterata core, yelk + 12 - 4 "10 " golf of terra

1. replacing the mention homolestal; " of i alcatal; to 1. Thing the ify & 6 \$ 27 sign sterk \$ +11 to squaptor 1873 : schoolea 16956 . 2017 releasing planes & Fisting in morninged 20 vertical+7

1- 1 become out tost, the in indecarage 142 100 21 65 Einst mil blastmare 5 561 Propriemese +7-++ " Richarge plane" in horizontal +3, Renmendional, 12. hor, 12. mer. ++0; in dearage descell stage (\$ 2. 4) ex RTG or change. 1/7 ...... 1, stage 13 27; ~ 1542 + blastnere - 27 frem Cherral In bringest wolker awyork 13 togs 30 17 \$ 17 Stor Storage 1+1. leaves to sur.

> complete (or total ) il. in complete by partided. sy, 300 arremplete 12 mil. hole.

incomplete mero.

Jeansy 188. Es 2 11 \$ to blastnere 3700 217 equal. cl. " \$ t+52 megal.cl. to > 1 22+ homo. egg ++6 ooy it + egnal chiti his equal ch . Fit , adequal d. +in sis implete : 450 17

partial tela 3" centro, egy - 2" 2 discordal fr. Huckin = 2172.c. control rostal, ogg r. 4.4. golf dinoidel d

final d. +27 17 tation Equal [Homolecital ogy] Complete (Total)d. [ Holablastic 199]

(Idequal) Eleventerinas. Unequal Platode Ameldi

Riscordal · Telestei, Schadia, Incompleted (
(Partial d) Retiles, 1steds, Caphalopouls Superficial (controlocated ey) (meiollastic 199)

superficial d. . Attropoda some Coefenterates blastinere, This es tre" to a clearage type , Fty 2072 to 10. 1. radial tyle. ser The 1814 18 16 181 = 000 361 16 = 25 . 9 squarely

in the eggine to Try on to freedoned il, thoughted il, to 1839 5. 18 mm 1884 en Psynaply av so no telolocital aggris 18 11 mm 1 127 Rotatonal d Type + 200000 sen Edwindering +5 2 sen + 31-10

dearing 5; \$016 cll : on clearage, animal pole? necessional from the regetable is to hongortal of you

. or in amagnall is to to some firet, bout suffer

Eminer : (Parouna)

resource totaloralizes "

2. Spitaltule # to blackwere o and ET- E .. = collerate is FIEIT E. EIT かいサマリアン see mytosis, まかナルメノルき Platocontates TI: R. ".

3 411 2 17

4 esi. Tege 17 7 Thatter

1 XIXI 

It will take





America Turkislasia 12 ma





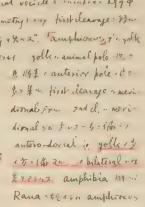
if 4 cell +78 cell + most @ 1004+ 1 21 most 1 At + 100 . 2713 1811 dextral ( 2. dexi Tropic)+ 1, ) animal pule- to fut 5 micromere, getable 13 > 2 Zur & racromere ( hesal coll). 11 12/cl, 11 MACrons rottleth & Ho, to micro & the sey stricte sinstral (or lacotropic) + in 173 " dexist. 2-4" leotopie in 421 \$3103 Ist quartet : 2 : second : 2 : third , 42 quartet おまをすいることからかまなないがかとメント式をして、 Spindle " simstral, 2013poral : \$2= truen quarter callit ++ + + 1 Plate; basal >11 = 2 + tot サラと、同様、別大りかりもりにその気傷の同うか Conklins our fertilized agg 1' zcell-stage = tu of 7 is the sun spisal (dexis) + 1636 45 1173. 2 alteret : 25xis most a Esile our 一番分をナバアル

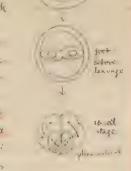
Bilateral type. egg: bilateral symmetry of first cleavage - 517, 7 "" in the top some if " " 18 2 cleavage"

hildershaymouthy 11. 1 fine. " thit is it is a to \$ 01 his - my > 1 type 1 18. 3. Pordates is assilian, amplioxus, amplibrais, tie vertebrate i B. . type our house yolk & + + 2 , ] . Ey N. 28 . Ile. Invertebrate fin cepholopoda, rematoda, rotifera, e finitype Ba. himilari Cynthia, Ailah metipe youthing, in phones, Cophen is a ing last Cynthia Dec. 10.

in maturation 11: 50 agg " tadal symmetry 7+2 maturation (4 . ; germinal vecicle i make agg & Act 2" hilateral symmetry + my first cleavage: 33m " 13 & bilateral symmety + 4 ~ 2". Famphioxus, 7", golk to a sis you six the entres gollen animal polo 12 2 antial amphioxus 4.p. 8.14\$ auterior pole 162.

pole yolk 3 1873 4.p. 3.7 \$ u. first clearage a meri
pole dimalinu 20d of unovi p. p. vegetable jele doral 115 5-14 = parel plane " pole met . Trizen sy 11. 4+ blastomere = . \* + blastomere = + 4 à cephelopidain













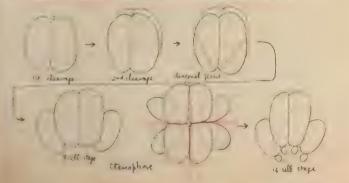
yolk 117 300x egga 12 1/1 merolastic +or . + . 1 d. pla

\$= 5. m. Dor one homatoda ;" bileteal . 2. re to 3 82 x47 mg ascans 

8 cell stage. 150 cleanage and leavage

12 cm celi + 2 y Scall stage orat symmetry , to s exisymmetry , as L'ello 199

disymmetrical type (2n biradial type) = 11 ((G) temphores Phy For indicavage him " diagonal: +11.7" 45841 cleavage 1837 11



Irregular clearage, Tize, + & to the, erregular + 2007 + symmatry 1874. 1 742 (221); Pur, radial (44 pr. birateral (45, 5" fecies - 20) ind 2+2 181 vi Enteropneusta " amphiores + 1 d. 7+11. Porpora + Cuidaria " ridial type it ich + the Bryozoa, Brachropoda + Fin hirateral type - 7 ph 7 12 29 miles symmetry, 18714 os clearage , star 122.1 400.

cleavage ..... , worthological process + 4 7 ", physiological process +4 315, - FAR y 21871" Determinative is red. 182, 7 to 1 - - blastineres ", 好車: 517 深语: differentiate s ih= endryo, in \$\$ \$9, strutent 2, organ > 1 km. ig Am Blackmare on thin structure + B, \$3.5 th & notice to \$1.7 & ことりもいり、お来えかりもモノ、ト

In determination is 60,100+ differentiation 1++ clearage 7+201. 120 The Indeterminative of prope of \$2107+11. The determinative + 1/2 on Bladwordstate to my file a ladyon instructure or a war Inditerminative in 2001 e 83 is & face 183 or to 48" F. F. First , Ctemplines 2 well staye ; - to 727 v. Doctorate 1. 1105 des Contragentis 1 \$31 511 4 " vo 17 + 1. feel itage is 2 . S'ell stage

1/ 10.18 4+1 "In-hydromedusal" Clytia +1'2's 16cell stage -11/2 1, -11 blad more so that -4: normal + planeta お生いすかん、いけず、対ななーちしっとわずれナリ、

" = " determinating " un determinative 9 4 2 & Synthia + in determinative Echinodermis " indeterminative +11. 12. 11 347" upg 1 organization & a Taxo Fromplete zon (315- 21, iRan in the first & Differen is leavage it an it all ero consplete : on televiminative sen 117 or a delivering 1111. I will de 17 a.

Portland Toyletund conserved the of letermenting in to the force of the theoliness of the

wire " ragan e it leature rett par trace 17, " " wheatane our, " in 45 . ... 10 get incase or Cytogony strong in fact for to the specifo

Cythery 11 - Planotra 2047, Surface, ES 1909.

Of Plantiers inembina, Sycotypus & 2 # \$\$55-1421. 21 5 + \$-1 50 ccil 1705 choine is wentaining is so clearage total slightly unequal.

An or Stop thy was and

ird el. (spirai dexistropie) 1a-1d interomere lit questet 1A-ID Macronare micromers " teritize.



trees as you've pas 47 cell stage



let que tet , lasotispic · la - 1425 same stage from macromere plote pole ( from uncromere pole ) 16 cell stage.

Planocera

loant.

\$ 160 7 1957 30-34, 3A-3D (20-24) 19-10/ 101-101 102-102 11-101 demortaco + 100-10. ( 1st quartet - 16 (1a"-1a", 1a"-1a", 1a21-1a", 1a22 1a22) 2nd q. - 8 (2a'-ed; 2a2-2d2)

32 cell stage { 3rd g. - 4. (3a-3d) (macromores . 4 (3A-3d)

2005 \$ - 3a-3d 5"4 th g. 7 th z is 4a-4d, 4A-4D 1 ruh" unt "4a-4d 6" \$ f . th 4A-4D 12 275 5 147 12 81621 4 16/15tage . 40 - 44-45-47-53-6/ ++11 32 \$727-64ntfor 4a 4d yelkbearer ; ih 4d 22 frein 1816 . is so sold I meso cutoffast on , is not mesoderen it cutoffermation efference & from · L, +15. 4d + to , Do 44d really no to 15 of 4 sea " 17 - 4d" 4d" sentodorn 4d1 4d12 nom mesodorn 11'en 11 quartet in into anterodosal restation & ganglion, eye, 2 and you tet. postera-dorsal restate in pharyex 1144 3rd quarter history & Forten & cetodermi - 48 - 7 1/20 11+4 1 / 2000

ascaris, cell-lineage 13:44 a scaris mogulocephala, Zor strassent1846) Boperi (1899), Miller (1903) etc. on; Trq+17. Maetimere 7 Prinz : Zur Strausen 1用い方板を行人(用の今用い方地に追っまりかくア上下·ハト listingers 2 - to yole yot. Hoyolk govin. 10 AB. P. +1. AB + chromatin type. 4 BERgions spindle 1 St. 15 reliet 1 11 on grande Alisons 5 12 2 2000 is chromatin 1 - 1 & France (diminition) 24 11: Sometic call + +121+4. 1=1015 1 31 1 1 1 4-cell stage + ... A, B, EMST, Pz 1113. 215 211 等的トローン面が注は後、bilateral symmetry, あトナル、次一分東テABの Example from out it, it to, Bran EMSTA Problem the State Bac 17 Ascaris Right cell stage



12 cell stage



minten nert ite

2113 EMST fin diminution Diffue a, b, x, 3 7 daugh dorsal cell family C. P. E, MST & boutral cell family + 4 > 11 5 1/22 = > = ventral cell family 15 4/2 :7 16 all stage 1+2. 111/5

$$MST \rightarrow \begin{cases} msh(r) \\ neT(l) \end{cases}$$

$$E \rightarrow \begin{cases} E_{r}(X)a \\ E_{2}(S)p \end{cases}$$

$$P_{3} \rightarrow \begin{cases} P_{4}(a) \\ D(p) \end{cases}$$

$$C \rightarrow \begin{cases} C(r) \\ Y(1) \end{cases}$$
 Siminstens if m

no 73 th shimsty not , 3 4 13 = 1 431 1 12 100 1 4 minutes of a moto (m (a) )

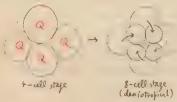
(styputain) = (m (a) )

- 7 dorsal cell jamily : 5 4 : + FD100 Hall stepen



24 all stage from ventral 「シンタノサブ mr pr +· たち + me sodorm + anlage ++ル st + アナハ あちがからいりまかのとの 71km, E, Ez .. entodermy, CR a' .. ectodermy Pa is Borrdiminition Milut pistern gonad antage 1. De prostedeum in anuscritt 1 12. Hectadum origin) 7 1/200 12: en 2W stracsen 127 Miller . D +3 mesoderun 71700 +27. \$ 100 / 33 " e et derin 11/2 200 strasien ~ Ch a n dorsal cell family on to \$ 7 estodorma replace exist.

Pohygordius appendiculatus (archiannelida), cell lineage ardiannelida " Dit 1+1 2+ & segment = differenciation + 1 | + 45/18 + 2 10+ 1374 - 24 egg : 4 yolk + andida & Er Kert-It. 215/2 Naplas - 2 Weltereck , 115/2. Abrahy naplator 2 Carraits 7 Men cell you cell-lineage , 200 120, 64 cellertage 13 on the Milion of mal Type radequal ch. 7 +2 2, 17 2 Hartla . Box +1100 5. 15 13 27 citie + 72 109 15 cillities . 100 die shope trought. as discreential subsect of the season attended to the trought to the tro ranlage 127 - " protoch, africal plate + 1" unlager the Ex cell stage = 25 cm is quadrante 64 all stage 120 17 1849 8449 ill x13 - 21. clauragej. 32 stage . 2. 1. ballti-



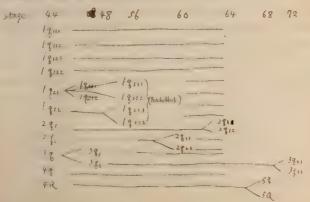


se cell dage

ナッテキルhollowston コケディを table:00; たもに 次をロン

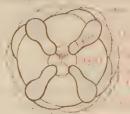
race bon late out

32 17 (1) 1 15 17 17 18 18 18 18, stages, , ) rosette. aprical plate amen annovidan close a 47 tocophore 1 2 4, extraterin, -17 4 17 2 to 2 to 19 annovidan close a unalidad # 1 = , melluscan close a mollusca, # 1 + 4 18 to 10 cm 19 18 to 10 cm 19



64 cell stage in 高平产及格斯·科丽明· internatial ... macromere + 2,4 ++32





from hyposphere side 72 well stage.

1st quartet 40. -> expishere, ectodorius, protocheron

2nd q. 38 -> stomodenius(4), farval mesoderius (4),
ectodorius of belt (26)

3rd q. 29 -> stomodenius(8), farval mesoderius (4),
erdin or larval methodenius (4),
erdin or larval methodenius (4),
erdin or larval mesoderius (4)
veritatal ectodorius (4)
(4th q. 8 -> interdorius, tel-dlast (adult mesoderius)-prines),
get

5 q. 12 -> sidos of mid fat (entodorius)
macroniuse.

9 - etodorius

11.135 1 Potilla

Jan. 14.

Patrile (mollosce) / wilcon (1904) 1 24 to this mollosce 1 cell lineage 1 4 planeted poly 2 des 5 find change, in is 4 cell stage 1982 .. collete + 124 6 24 to 1 16.77 A-to on it & 1 m . Hattoneres . 21: ; est -1) 2, & mlax attopic spiral closuspe " 8-cell stage . ru, sittly in 1st quartet . hasal cells on their micro heeps shie sites macromoras + in (i b) when

4 micro 4 4 macromeres, 15th. 1 th :+3267 12 ++2 3 n historians 184+ macromares 1844 IV on 20 cross promo + 20 1112 124:07 blactime ves 14 them. lacotropic cleavage , 27



16 cell staje on 1-3 quartet ing annelida, tirbellaria to the cotode in 4 17em 6; " ectablost " " "

L <sub>0</sub>	8	16	32,	64	
	19	∫ 18,	{ 18"	{   9   11   19   12   19   12   19   12   19   12   19   12   19   12   19   12   19   19	rosotte or apiral alls anuslidian erross molluscan evoss
(A-D)	b	192	1621	$ \begin{cases}                                    $	149 trochoblasts
1	R	{ 2q 2q 2q	291.	2911 2812 2821 2922 3813 482 483	tip call



Ique apiral plate in trochophore , apex = ra sensory organ = ...

19, prototisch + Trochopherer ciliany band, # 17 171

39 · 30, 3h, 2 quadrant 7. 分學·華書+rin e, dishindle to to to to to laco tropic . ... , lifeateral symmetry , > > . . . pindle # bilaterality , lephot 4224 norman.

3Q ... 3D. 12 mb4 cell stage - min . blastococl 1 + a ungrate i7 > 251. Streekillions Minh frank 18 15 6 7 40 ad the

td (nesodarmic toloblast) # 150 pt w to to -

4/SDAEN+ mesodern 1 Taps often.

3A-3C & + 47 3 Densy blastocal of : ungeritary & 1 3/19 +C 4A } entoblast.

3Q (3A 3D) + blastocoel - migrato 207. gastrulation process, 700. 3Q.7+ " ectoblastic " +Q" extomosoblastic.

64 cell stage on fight to at 7 12 11 th Car stage 12 ntg 1 my trochoblast calls. - cika 1 % i. sui 4 groups + + 2 x + = £1 + 1 Endry or my no C Renophore 110, 411 > x -"Ctemphore-stage 12? 2+ 27/10: , vosettes = e cilia & 2 (apicalolia). mu stage. Ersin no " " Pytrochoblasts, 100. 2" trochoblasts xunnexy lade quadrant - 3 . 4 h & n. 4. +1=1 ... 2 nd quartet (10 291) sushe 1 10 tip cell i =181. 1912 19 molluscameross cell 1 - 17 5 6 50 nm. = it 3-4 cells ricilia 1 4 v. " the cilia 1 x + 5 to coff to hing + + 2. "Introduction prototy och + ~ band " the go that 'typical trochophore' + 7 12

in all quity.

Birding bisse, bigg

Clearage ree tà (annelida, Terbellaria, Mollosca).

Unit blastmeres & on 21/2/5 + 15 " + 1 " + 2 3 group + 1' + 100 1 %.

correspondence + x rue. 12 to 3 groups in 4 cell stage 1 h = dexio, locotropic

dearings + 2 17 mm 1-4.11 4 que tet of micromores + 22'

1 transfer - pretrochal region of trochophore rectodarm &

2"de 3rd guestet post trachal region, ectadorus ta

2911 : My trouboblast 1; 189/101 : 11 + E- Prototioch + 1900

D - stomatorine

écroblastic resoblest

2d . 4+1-1+27 Ectoblastic
teloblast, mesodarmic
thoblast +d+54:11715
175 37.coll 1 \$ to 1/12.
rentral necessitions,

ventral nervedond, irrentar muscles, nophnitia

ind quartet: "ectamosoblast" +7 ns, mosoderun 1 - 195. 51 /2, cm. 3 groups

1 is torbillaria in 2nd quartet, zir, quadrantea 2d

5 1+in 217 n mollusca (crep, dula a-c, Unio a), annelog

1. 1. 1. 185, preguadrant 51/42 & 1400 n. 452".

ectablastic rune 1012 21/4 5. mosoderun 24 n.

12 101. ... \*\* 41. yolk 159. & \$3 2014 (yolk 15% change.

1st cleavage plans + embryo , modian axis +1 13.14.

39,18/2 - 62,480 "1176' coincide "11) 4.31'. t' >>7771711 1. Ascidiany.
18/27 1. 1st ob. pl. cleavage plane. This .49 I cembry of median axis of
bilateral plane. - 31211. cephilopoda Fi 1274t. Ctanophore Fi 1 st cleavage
blanen saggittal plane on (biradval symmetry). Frogr. hewport ('54) 5.
291. 18/2 1 subryo . 40 76 16/6 11 12/4 1.22 - 72 2277 2217 2217 2217

sgittal plane

1 plane sa id merone Annelido hereis, chaetopterus; gartispoda 3º Crepidula, Umbrella; Lamellibranchia; Teredo is cuil 1873 16 sa li embryo, sugittal plane a Jir IV rine. 3 respiralty de clearage 1821, ir annelid, Polyclad, in mollura in 184, 2nd ideacrye plane " median plane + po ports + 6 450 + 27 era. homatoda silt clarage plane a contryo i horizontal plane . Them. Picos, brodela ;". learage plane + embryo axis +1 (2, 12/1/2 +0. 17. 1" 1 /2 /2 p 21 e11. 13 1 1 th clearage plane + axis 1/12/14 on.

mechanism of cloanage.

ister an all die cell division i modianismi and in very in a clear age 1 1/21 gp . or 1, one & Boa to 2 " ( isolated large all Track ) The mobile & com The anston dearinger of \$285 process 7 17. n. subordinale other process of by an 1714. 19 central body, spiralle fibre, chemosome, & the wechanism, finners to the nechanism: spindle fibre i cheanosome, ut. chromisome. 5:9 poles Sung coldwall , to further seen experimentary attruction. Flaratillings colleteiling 172 +14 Filar, Chloroporne 1/2 1, 177 + 120. opo treat anh. Sp 7 it in Korn 1 & 1/6 1 411 to cell body 11 11 7 17 11651 371 Harril Lody Fito 15 to 15 to 1 crostacea, superficial dearnge 1 \$5 + #5 + 2 1 1 1 1 1 1 27 + 21 Lawrage 6" 11 7 + 200 3 , 13 51 1 + 1 Cyncition is - most callanon laren s'zn chaetopteres plillee 5 307 (4 2 ) my 1, 45)





2 Centrosomers \$ 1144 in the olf. Borevin 11=1 op/13 1/20 + 20 1/2 rest - 1815 mm - 1/1 blackmore: 1, chromasome + 42% . 16 " centrosome 117 Alta. Autiti 1, 12 chromosome 1 x 12 clearinge 2. 2 371 call it. Inthis chromosome : > + 2 facontronon 21. 3 11: 1 34/actory 420 Freell " 53" ces; - nix taj n'e renessione 1

mechanism of cleavage. . it : 14; 2

i Hany of fibrillar contract belity dy Van Boueden Boresi, of inde a actor 2 in fibrillar in Martin He contract be occorrect to 5 . 5 . 5 . 5 . 6 horillar with it. of fit for the built of the fit of the fibrillar the fibrillar to 5 .

is there of polarised field force. Trythic figure , thetie magnitic held there energy, to the home well

it of stiff me execuse.

The transfer of the triaster of tetrasters

of one theory of the triaster of the tria

ripole - & sam vist 10th received 1269

1. 117 rid source us cover to the able of

2100 h. Naoh ~ KOH ; New ing with from the

1 to follow vislage tension 12 pipet 12 to 23

capital in resp. indian satisfactor 2. speck.

Rhabalitis (Newatada ) 199 1851 180 000 12



as the 30, control lody of crist convent for use convent for use control lody of viscosity of send Rhumbler is true to the forphology of the forphology of the forphology of the true of true of true of the true of true of



redissection on 2 Hailbrown courtsinge, 7th of westerny, in 11 \$62. M., in problemse, in the best Recently, 10th St. media, now after on in Alestrain 12: 11 1000 1 3 1 316 50000 1











iften 36 min 25 st agg vipormanth sint My me White consider or in a it in planting . of icotropic is homogeneous icira, charage note as its they a control. tour deterry , & misterie Isita to O. Hasting, Driescher 115 3 4 ... " de tros 12, 10/2, 11, oft. 11 & 1014, allenteraction on \$134 e . . . . from soli & received are collineage not in experimental enterelogy is it is fire genuinal localizations mosaic theory of buckbrane + the terre in agg . 1. 75. 18. in do prove conternations 4. 1. . 1 2 torren. W. His (74) + 1 1/198 - T Visere Korferform star 11. 13:4 " subjet development + 1 in blastdom or " Organholdendo heimberiche

" " 1 th it is the standary of lankester, Whitman (x), Van Beneden (60). 317. (D) 4 126, 399 Augholl stage 1 - + 1714 10 - + 647 14 16 7 16 8 40456 12

> helf-embyo is +1 16 4 in me cubyo 1 13 > 1 宝板、宝板催化1-11生器+3在111中以Roux · frogt 2 cell style to blastnere 182 , 2411

1. I am all half embryon 122. 12. ... 116 mussing half , 4/4 the 12 engrisor. 2091 por formational to requirementation & 64. 0517th 2551 Add 20 moracic through . ?

wasaic thany 200 910

\$. 31 . Rto Clouophore ( Drosch & Morgan 75 Frischel 98, riggler 188, Jatio "1-" 1); gastropeds (Crampton 97 ( Pyrnasia ), Wilson "09, og ( Doutstien, Ratolle), Conthin's ( (republica)); Tomcata ( Driesch '35 (Phullmia) (rampton 39 (milgula ) Contin os (Cyrithia ) or 1850 or livery to temphoron cy harit I formation the smile ) the Hij T. Walker 200 Blage + of bladings men 9th

ipいし、方方、ハリ、は本がないなかがいいは、Headstra Lis Caleron free artificial sea water enersthe "... 32 firm, egg, .. Libole p. xins galino layer viene

Musto blademara 1 342713 for interested one of Patella ; 16 cell dage 144 192 in primary trahablast 2+25+217 11ty 11 x 73/11. + 3 statut, on nouting



64 cellitage) Dentalione 1:1: 1

20 to 1. 2-cell stage, unequal co-yolk acres 17 AB 12 (D-11) ADDER 2+15 april chan 14 14 + 172





for surview

"ianal unde

blaupne

To to development of Arcidia) lethication . . . . uggitte Age. \$\$ +. Mark Ost. metal on in its generally as some Bite total my adopales to the first the first Earth guarante and in the igothia 12 & development - fertilization : 24 Tom ipp 1 \$18.0 Px . 177, incommention + Dip: nationation & m. . germinal visible voir clear sub is yellow yolker & XIII) 3. You yoll . I . creamit group . + 1 111 E . 15 - y clear plasmy layer, to or but op-1 man note: the learplasm - ectodorm, yellow mesodorm, grey-antidarm total adequal type - squite hilaterality 1 in 2 combinger in for hadower 1 "Il. H. asymmetrial half = is x. o. pl. .. In is = embryor median pl. 314 2nd il. pl. 1. 11 + L' i meridional i 4 blastmare 194 1812 > 4 yellow suls 24 3 rd is is equatorial + 11 to ruinal pole 1 18 2 (latitudinal), animal pole - i's electricise in thear sub. In . ( seek stage ). hongontal pl. spiralet 1. 1 me le me pi + de mit ++ + + + + + + parimal pole · 8 " regetable pole Top at a animic bole on that to call group with the 18-18-17 222 regerable pole sorri trie & Fin 14. 2 xm 1/1 1 to 7 mallest cell .. willow with 1, 2. 1, 7 , 2000 sellow + grey yolk +7 75 75 75 11 11 In m. they was a 12-32 cell stage xie special the recells in 4 yellow I lastrus .... 1 39 : reg yellow cells " \* 2 xellow alls + 2 grey colls

-310. ip 3 pellon dostmere. 14: Tth -13:44 + (mendernal cells)

1. 12 1 11 prey entrearmal cells, R 114. 2011 chordeneural cells (4) arey

1. case 1). 1103 - Leaved si etc cells (300 regetable pole 210 222) 26 for

hordened cells 10 and corns. 17:10 - Ranimal pole reported pacatidanal cells 12

yellow, blashuse + to \$ 40- 17) コルカル方、水土のかかをないてきっていい 21 32 ceft stage .. blastola stage - 47 4 · blastila ... . Tr. 62 will stage \$4.7 1/ questrulation - 10 1 marriage the regitable pole on Martineric 93. 1214 - In is regardle pole : 100 on o 1/4 6 13)+7. animal pole 1+11: 6 % and 5 1, vogetable pole o anoust pole the 1724 118 - bluetpore 1189 05 2 ml =110 (#it) " chordal cells, 121%" hesodermal cells in our blastpore + 6172 1 cells . ectadernal cells 12 st -mg lit thip - # 1 2 2 1/2 @ 2. 1 12 - in blastfine · pla 1. 47+11. - + emlyon 12 Highing 成长:729. 1. Hasthore,133" 115

作, 方: 移い7 20. neural plate, あいりた

" ridge story neural told 11 to 15 to fold

Attent they neural told 11 to blastpore of

The neuroseteric canal & try neural tobe

reachesteron, rejetting sting

neural the 1 to For a totalood to for houral

told in a for the 1 to brain vessely 11 to :



neural tale : trippen final cood fillette. neural tale a fitte of the neural tale a fitte of the neural tale a fitte of the neural place of the second of the place of the pla

gillslite desget achordence.

1. O his o, to the blackwar ganglion Tay

1. I feether of the blackwar ganglion Tay

1. I feether of the blackwar ganglion Tay

1. I feether of the blackwar ganglion Tay on the servery the servery my

1. I fee gastrele ... .. .. .. .. .. .. .. .. .. .. .

Marin Agree ( ) Series ( ) Series

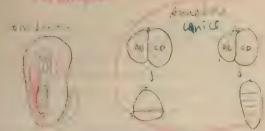
24 cell stape, 180 for minut mille ships a root ero 82 in 126)

\$ 20.16 . 21 . 16 principle. Str. 10. 18 . 10.

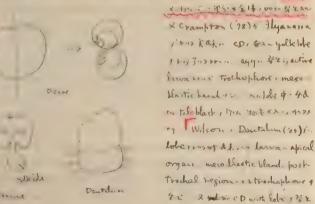
Wilson of aundiday Labice, 11 . 10 \$ 46. 200 12 all stage, unequal 14 . 1

14 pipets 10, 00 2000 Apr 1221 (10 00 to) post tradal region 11 to behave . 1

tradiaphone 4 2. 11 32 50 prattichal region, 11 for 11 11 11 11 to behave.



sienegg, mosaic枝, bt snerth egy fragment on 実践 e 同档/51集 李? 12 (Temphone (Berri ) + his many Driesch of Morgan (95). Tischel (97, '79 '01) Ziegler (98), yatsu (11, 12), is egg cleavage, 17 m + 2 m + with a plate - son and for pose 金埔, 平和1000 = 寄生, 5月7 电分科



4 21 apreal organ in post trochal.

The real parties of the

region is the in polar love (yolk lote) . ... Person of the Xin for home, & . it type 11th is cleanings 1264 egg 1604. 44 lobe , dit wit & 104 115-1112 (17 El) this fall on egy fragment, tilk, lastmare, isolation we morain thorny Pout to the orleany 1 3 60 1 prietter say +250 it know egg Hydronds. Edinodams, hemestines, amphioxus, Fisher, amphibians surreggiblet mere , whating son may - this to a though a the salt cano the of a this mere on it is . 211 the revergy modaic eggs 21 of Equipotent egg1 27. Drieth (91) /11. 1099, TBL , 200 & 16 to 1 to makery . Ithin it of the 12 1099 , 2007 2 call stage; blad more is indute the zery 890 for of most me harpert land 185 & dece Built stage so se 12 th ss July , Willow (1), morgan (16) "authory;"? or 4-odlitage visitate in bladments direperfect larva Trs. 1 . 1 soparation Fite most time embyo, 195. × 20ja (15). Chytia i 2716 cell ctype is

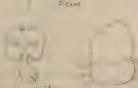








redetion so dwart perfect culyo 185 "s; morgans Findules 10, 2, collities 1 -t, blastmare, 12: 10 th, 12 18: antibon :: Hollokor (18. 97 10 the laps Spermann (01 02 03) o Tritory: sell stays 41, cleanage, fullow-1857 sperming birt j' 199 11054 & 16 10. 18 x 125 spename with Hartile store rich 11917. reself construction & artisky in mention - in double monitor 1/15/16 The world but the former dear Britis Person, Okionite was



Secrete !

end stower on B 11113 on 12 on F icleaning follow & 479. 14 median plans the ent or is " a transcore in target Ego a Morrow the Bt. in 12 mc Claudon white Chorobalus s' sull tage in bladmare, manying striffic (Erei my milling of Roux . Rana . 2. 1 19 Rana in half contryo . t. h. 24 + h. ) . 1 1. 11 . ...... 2 Carchatolog area Wilson, Talony, gatso of Heport ... to be one til as change any

Beile Beiler & Dy 1 A Her

blastilan - to a intil a rasa gastrola, publicalare E Ettoltone 3. 4. 87 + 1 8 11 ) & 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 Bareli ('89, '95, '14, 18) 9 7 . 1 Tto. 000 1 . 2 1 x . 9 : 81 + 8 - 1 & 1 proprient sour " programment " nicleur アン・・・・ナ・モ、モディエネレ、シャル pottingation/といってのアナガー事をから 1777 - Fill to A. The one work I to be to partial dearage Fire to some is to it is the miles to complete to compres on spthty. Att - morgant = to 1 ) & Drienh (199) + took 15 \$ mot 12 series " with ear to 518. Fit, " Wer facual progress cleavage + +113 シベル ··· trapment it はらい宝は、Enlayor+114、720 学生4 regulate トンウルー・・ エッ いは、いはいないかりを言いすれてはすいしななへ)

13 3 14 2

Nemertin, 21 D x 12 th cutchegy +2m. 2 Cerebratulos, mr. Yatid 64), \$ 12 m. op + th

15 Fitz+11-pp: stalk, m+ 学とでり、こいのマスタマスタキラスティメリン17+11/1111 >17+11/12

The tou tainst spindlett, sperma + +1 sperma + +1 devolopment + the if 1/ clearage & tie 7 c= + 17+7 lama x1) の性形方:ナナルスイス、ストミノナイ piece- forma が入いする寄生 2~ is merogony+1. 21+1) is normal+ larva 21-1" == 1st polar body street suit operation 7绝 4+代果·同: +7ツ

0, 33 Tritoryuza 47 spemann 19, Baltier 20 1 troit Tritor 1859 partilization 18 1 するかし、一方のDP有限等を接がアルトサール、1世方の「Dyma 1:12、だったかいトランをが発ったり



Mz·方· かいですか embryo 17 1 101ち,ちか haploid, Tadopileがなり引張を生りのいかい、子は、な adulto アナルナッナのハ trif mosaic egg is germinal localization, ++ 6 60+ Egg > 3 ton Ctensphore, aundida, Assidian etc. Nemertin

Edmoderman, Fishes, aphybians +in 215++ 21+1. 21-+15 agg=017 \$ \$ 1970) Biller 13. 195 " 501) cons je Hiss, Lankester, Rond + Forderation of ice 11.0 Stry \$ 11 1040 } 711 7 7 7 + 1/1 10 \$ \$ intercologation " or to on log on log a fait 11: bo Time is 12 +124 + 12" blastmeres , isolate of 27 \$ 4 + ent in (Ki wy 3 text 4 + 1) 1 by justial charage + the is into +5 \$ \$ + egg, our heavage +1 17 blastlat open blastila 1 to. 21stage + \$11, 2000 close up: 17 gastinlational 15 22+ lawre 1 he cit. Anthioxus reprinciples 2 = 1000: is isolate my blashnares took sor postial clearager + >+ 36 + 1 to 1 to 1 to 2 gartinla + contragor stage: needless / \$17 ignt 大孫 不多下in. sur 部 & equipotent + 本 ~ sur ere B germinal localization 72. " I'm moraic 7. 1 th 7 ( to + : go resulting process 1 = 115 17 my it + 1 to sis + Contratuos

e manis lyans & jor 1920

21 proceso, ( fr. fr. n 1 fr. 24 n E12 = \$ \$ 7 + 1.07 s. Tilgregy ladigation

some delle stage 16 cells stage 16 cells stage

Learnette, 12. 8. Recistage of Ignantic reach course with ERAL 2 to 1 Harmone of tourist touri



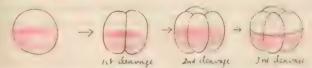
2'27 . ... apical cilia + \$ 1 + gostinlate it 1 20 2. F. 19 5 1 yestrulain

L'introduce a leterrepolite

All minoters a leterrepolite conservations of the second

ine Lin Finter goothegastorite はイトララリハ 19ト Q トラリアいから、竹笑が 果って、IBanismo Eczilleigleta " and clearage line . 18 17 5, " afral (D) > (E) cell : 2.1. normal gastirals ET , normal + larra .m. 18, 218. 19 + Q+1181 75 % 1 +12 ( " 1" ) 7 20 mg 47 - 00 pt in equipatent Colebrations. + 5- 13 in egg = Eyerm. inal localizations in # Weth デアル H. Etrembryo ニャリ メアルナルハス文室 すもいるなまないらいい 012 4 - cleavage plant

a defend in its act 18 15 15 - 111 200 The clearage a total undeterminative of



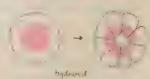
quantitative i'm A'm. 3rd clearage. determinate or qualitative: , m : aight all stage; 上下西京-分子: 第1751, 在某107512 annelid + gastropod 150421 in 为-1plane n be · 等105111 -11 blastnere: 分以10年上nesodermille 1754. 另 · 九,为-1局于 37. ie 21764年-1clearage s be-determinate 1011 anneled a gestroped.



acride.



15. Aler of to core Extra ist decorage and terminate & 21) Endeterminate of 21) Endeterminate of 111. 16 cellitage = 517 Box / Kastmare on 2 Trendage



7 = 2. 517 & 51 11. sperma x 2 1 1 5 9 rey 13h+ leascont V2. 7 1 deavage 150%. To 4 2 cqual = 757 6° 7+150%.





₩og.

bus an planton in it is a more

entryore oblique 1151. 22: to in 74 tembryor 2. 18 fertilized eg. the bilateral entry 18. 1st clearage 1 flace 1 that organized to 2 feetilized eg. the bilateral entry 18. 1st clearage 1 flace 1 that organized to 2 feetilized eg. the bilateral entry 18 for it likelearage to 4200 entry 18 for 2 feetilized eg. that 18 for it likelearage to 4200 entry 1975 - 2 for 18 for 18 for or plasm 18 % 200, 1976 to 3 for the Borachet. 5 the 5. 34 100 et learage blane + 41 for embry 6, egmanty + 18/4 ... 18 or a g 7 compress 2 for 18 e 18 con 21 for 18 e 21 for 18 for 21 for 21

hormal

abnormal by pressure

ist & 2nd a soormal + is 48 48 470 = 11 + \$100 50 4 = 5 holizontal 201/ 22 28 28 2 50 1 - 560)

: (22. " 15 = fish , yolk , 3 x egg + is yolk = E Fo , \$100 up, 20 18 46 27 460 deaunge 202

104 (25.)

<sup>\*</sup> homeign letited malificentor of the horizontal on and do, sing Doffi, in office for Letongon

Herting 193 . Egg + hair axis 1+100 side 1 500 + 40007. 11154.

1st.d. meandional; 2ndd. latitudinal 10 + 3170-11: 3rdd. 1001 + 1101;
415 cl. 5 > 2 \$1+110. Born 93. > 15 \$ 6 000 ) + 15t. > 7

Figure 19. cover glass 12 = 23/4 + 2 = 14.5.

1912. Driesch. 15th 2 and a money glass + I. 3rd et cover glass + I., ret en madrally rectablly arrain blastmares - 1

416 2 = 11cl - 21/72. 212 + pressure 21/12 + 7 = 7 = 11

L'2 - 1. 2 = 11 & 21/12 = 2007 = 12 = 1205 = 18 = 85

\*\* 15 manualla martia, 212 flor 70 /4 " 2: 277 511 m in pressure + 75111 81 - 1976 5.

of 15 4 4 th di. pl. 1 it 1/1 8 3+ radially structs 5th cl. 11 play invadual pl. 50 2 12

tomantal grand 34 I . 3 " temperatal pl 2 + 2 m. 6th cl. 11 Fezzy. 2 me15 1. 50 el.",

2 6 6 11 12

"LETTELS pour one "the inters of the trans of the intersection of the pressure of the pressure

release ins it this, 25 th + egg. honger of classed blast mass of the I'+ the = 60 = 1 2000 of 1200 of 1200 on 1200 on

12 Firego, For - - 11 egg + Putter orphasma 12: 11 (ocalization+cl. 1/16) (事·方面xuit e-11 regulative hower 1ますトンだらでは (Bt min. sulfine) equipotent egg (11 ctc); isolated blastomeros. Fit 1-1p1 00 9 +2 5 3 2. open Mastula + the yes D+ close : 7 Th #4-14 & + gastr. lation 14 = 1 12 = 1 + equilating power + 184 & private in regulative power + 3ix 177 . mosaic aggs . 2. 3i . 3th 3) 1 = 17" >1 5 \$ 5 1 2 17 + 5 > 17 + 47 ~ Rows | tog | egge ( 34 = non 10 2 cell stayl ) - 12 app blashow, \$ +13 x + 9 17 + half, entryo is \$ 10. is is best generating a 1; } /= + = 141 entry 0: +1. 2n-121 +eq. later power +1. \$ \$ \$ \$ 17 ; "17 7 2" Tok . To egg & animal pole + reportable pole + 1 \$3 124: 7+9 & axis + horizontal= istu Etopipi Dentoplasma protoplasmay to to, lower pole ton; it. F. ; F. in 177 Hy Janis 7 tzn min egg 24 normal embyo 1 2 Born 85 O. Schrlige 94. · 24. 2 cell stage=+10> eqq 1 E, T + = 7 2 2 + 17 79 h & blastonare 10 wholesmbyo t. I. double monstay : +1. Horgan 95 " 200 stage = - 47 =11 = 7 7 normal 1173. + + half embyo = + mo EF Extence + + whole contryo = + 1 20 \$ top · how teglisting power to is '2 cell stage, copy on 2 h & 2 ; ithis remargement +211 Def entite ova 72 m ou + is regement = Lie 17171101751 311117 - 3303x= half embryo = tous from cay 1 2 cell crage = + + = 1 blastmares + = whole body +1/2" with a

2 1 7 7 2 7 4

2:00 20 millional con control of the conference of the conference

asculiars trunchine is a + 5, 3, + x ... two. Zeellstage - + + s. 5, 4

call when so 1901 the eric to to special andres = 170 to to 20 relose

is at - 1 ... 18 is it [torums regulative powers to to 200 to

to actually soft was 18 > 2 200 R 500.

it raison 12 . season 20 individuals - 0, ornegg. 21 to \$ 1 to \$ 17 to 17 to 000 cags featilize the normally: 4 to large protection the season of the the tit of larva on colling wound 1 have to the title to a coveri, Harbst is phase house 1 front egg 7 strong flocentrots 1 sperms featilize in the season of the colling o

assess conversed to part egg observer a sest grant millione

Estrat des.

probably at the wholeton it

## 1. 18:20 & & it regulation 18:1+11. Inosaic theory contradict 2.14 = 2.1 to subtract the support the support to the grant egg 211 double submo & 222 22 20 averate 2 20 201 spicule e normal 213 & double monstar +07 000 = 20 Larvar 2 20721 Borevi = 201 sugiant egg 211 -19 giant cuby 8 \* \$ \$0.5 2.1 double immo 5 \* \$ \$ 100 \$ 100 \$ 100 \$ 100 \$ 200

= (2) > (3) - (1) 2 mg ded cubryo.

House the

State of the State Free melisca,

prignant in buting deep rest > yellow > white conourless > gray ich. \$ - 12005 " Hel = \$ 1 cm +1 2ais + indeps egg + 1017 d > 5 to : 15 07 オチ・モノトベー - 21/2215-28-7·ナカキャコ、ドナトルシキュモトリノチ トルンタタノギ 7 - 1, no maily - \$4 = 20, de & 20 , main axis = 12/4 = \$ \$7 25 11 2 m + . under . Free is 1st cl. 1. zone + L' = + 1 tet + x' ton o lante! st 1 " " Coul mi & h' undep. tu.

- 11:6 5 hastofter 3; & Morgan & in mingia (Tamellibranchis) 7 +15 ( 3) rai to 2 ... to 521\$ + contribuge 11/2 ip + 11/4. > 1/1/p 1 promit pinim, oil 1275 とのはこかっては、かくを使り対すって前1000万 rounding 1 in 1 me + 18/15 +7 this 1 animal pole + 5 to 5 (2 cell stage + +1)

> below they represent at oil at pigment.

Contien 17) or capitala sinth 1887 7 & morgan of whitney (62) · Hadatina: , & Spooner a Cyclops, molt matiendar, frog i 17th 15.

chatter IV. 4.85 / 1 to 2

Feb. 4.

formation of germinal layers (tainblattarbilding)

germinal layer is ecto, and, maso darm, # # #+ 1

Blastela cleanage 2. ar flastila stage. m. Hastila m B3 - 7 SEPTET 92 1 segmentation can by or Pastocoel 7 图·子军中在抗伏·加山村, 25·7·107 社族11

A. Coeloblastula. +: Ifastocoel 7 trane1.

a. adequal coeloblastula. cell/ # + 134 \$ . 4 12- vegetable pole= : wernanimal polergining 1555 tel. yell > 5 " = 1 , to = +1 egg + udequal eleurye 9+19 tite. 199. Echinoderm, amphiocus

4. Un equal coelobastla.



total unequal clearage - >1/4 + to \$1. vegetable pole : mucell to animal 29 1415 titu. annelida, mollusca son spiral dearage ++2 =1 3+214/28+1 2 Poly dad vort. 2 Frog 1299 .. - 731 



## classification of blastola

- B) sterroblastola. Pinno blastola.
  - a. equal 138 Lucernaria + x \$ (4) フルー 辛の神・デ
  - b. unequal

131. Rotifer. annelid, Trematoda, Cestoda. Platyhelmintes

c) thota Morala. #= -> blastila. clearage spindle 1 to to tangential + = , 3 500 5 leavinge - P\$ = 60 \$1 は radial+モノがまっ 女来ルト中実ノ cell,15100+到于大東山、京東/実,

174 Coolenterata Mammal.

D) Placula. adequal type, clearage; pole, \$10 = 高事をおいつかいりんのするりをえ

> by Homatoda. Oligochasta, ascidian, Phormis.

E) Pariblastola.

Crustacea + 2n. 1973 supaficial cl. 115 まなまいてい、は、egg, 中心=yelk Pnタメ cl. ハウ たこみべれ、如いの面になりしまりします。 blastila + + n











## monodernic si didarnic a



F) Discoblastula yolk, ## = 31 egg = 2 u. animal pole + veg. pole トノス回ノ東ハをちゃナリveg.toleのかどは、六 3 this cost 13th = 2 \$ p blastila stage. 121. Reptilia, Arres, etc

## gastrula & gastrulation

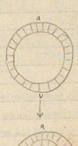
Mastela stage : Regastrela stage En. Mastela stage , monodernic - 1848 ; m. 1 = gastrula - didermic = \$ 55+0. 21 monodermic stage 03 didermic stage = 2 sprocessy gastrulation + 22 20 et 1783/2211.

1. gastrulation by imagination (or Embolic gastrulation)

adequal, coeloblastila: 2 " 45 ; 27 gastrulation 1 type 1 2701. il gor. vegetative half 5 animal half-1 \$=> & i. + = 4 xx 751 didernic struturentaty, sur ani half + veg, half +1 KETES is veg half , to sey, the to 13+ いかとしていけんコー屋の内かりかり

1/2 ectoderm (ectoblast, epiblast) endoderm (endoblast, hypoblast) -+27 = 77107 govant primary germinal layer 

blastopore lip

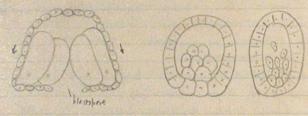


gastrula

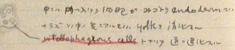
を松松初の3, か黄けりのgg、3,2=m. chordata j= amphioxis

2 gastrilation by circumerescence. (Epibolic gastrulation)

Tunequal coeloblastavia or storroblastavila, or ani, half an veg. half icell, to golk into \$ + 5 x invagination 1 to \$ 2 5x = ting astrolation. is animal half 111+1 cell o veg, half 1 # + cell 7 + + + myath = + 134 Ctemphore, Turbellaria, Rossfer, amedia, Mollusca.

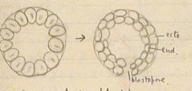


3. gastivilation by bolar ingression regarditive pals - 12+175: cell & blastcoele 1 p= >12 u er. += >1 cel .. -17-12 amorboid th'=+17 4=2177 24=174. 1530 didermic ++1my authrepool, Mollusc. Hemetade, hydrogoa.



trong egg, gastralation

4. g. by delamination Spindle to of radial = # = cell = = = +1 1171 ector endo = +11 blastand 54171 archenteron ++ >> blastopore > P2.1 1911. Coelenterate





5. g. hydisco blastola.

disciB風ノ中的が中等=ケッドンテなりり、ツアかかスタニ内中=あっテルテンク 210 endodorn ++11 Af= E+13 PULL Ectodern++2 21, - By >+2-702 tij zon, zr. blastscoel x archenteron +ti- 3 24 25 72 /6 21121 frog, gastrulation quertosic.

gastivlation in prog egg.

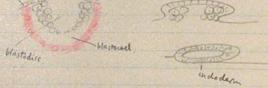
121/43: 617= cell division, 158 +11 45,+11 27 germ ring 2. marginal ring + \$ > > ring , posterior = - >1 1年は出来ル、コレハヤing、ドイ学サニコルをカプな事に19フル コノドキタ Rusconi's grooveトをつ、 zusqustivolation

Rusconis grove Johnsal lip of blastop ne.

21/4" stage 21417= 217-17. The the vagetable pole to 19/12 i表のいかこれをctodarm+ endodorm 1=1115日存電力の内かトンテンル

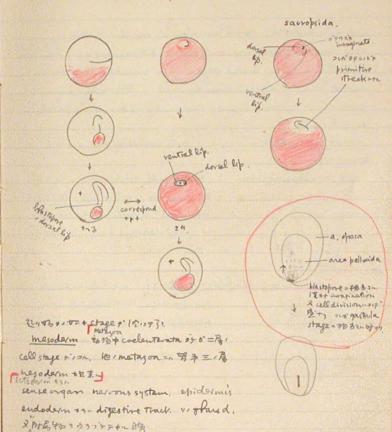
gastrula, 16/21= +71= archenteron += yolk (x) +11 \$ 6677 pm

g. in Solachian ogg half marginal your marginal your discon from animal pole . Hoto In



gestination= 2004 disc , lat=invagination & 2 300 Rusconis grove = 批多2, 24, 附生注,+1, 体=成至+1018+1, 110 5, blastroel = cell of wandering in it, 12= 14 is some & Thursday progretation 11 corresponding stage = \$ + 1 × 2 × 1 D 1 to 5 + 1.

ものが見からりはあい Saurohsidais teptile+島が及る著いナル、コイガ Sin Hastoporen 1847 25+ ring = +2 132" x73 2" to, gastrulation,



meso os. skeleton, anosch musenlar so veruler system. Amelika neso n hetarogenous (214). Mullusca, Anthropoda (54) hematika Turkellasia etesia larval stage - e zun mesodam " ectodam on derive time 14, aglecto meso der m+x». Har mosendagne 146 2-24, 243 to 55: 2 adult, mesendagne a, -46; e estodara sit thron.

1-11/18 on entoderm origin is ento mosoderm+11. 215 txn)==11+txn.

-" Wrinesodamzellen 2. Thesodernal teloblasty + 1 + 1 + 1 + 1

Amelida, Turkellaria, Nemertini +1 spiral cleanage +211=1 De Arthropoda

: "En

sen archenteron + est fold=207 # # 121. 24 Echinoderma.

Prochardata, Vertehrata = k.

mesodorn = \$220 1051 11 coelon 11.
21 mesodorn 1 # \$ = 27 toto 1.
= 121 \* \$ \$ = 24 toto 1.

12 E